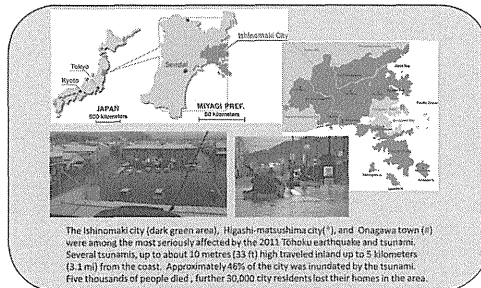
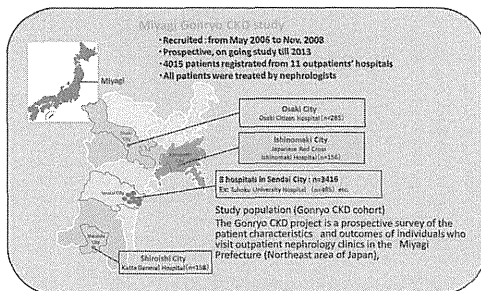


# Impact of the Great East Japan Earthquake on chronic kidney disease without renal replacement therapy patients in severely destroyed coastal area of Japan

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### Methods

Study design: Prospective cohort study  
 Observation period 2008 ~ 2012  
 Registration: 156 patients from Ishinomaki Redcross Hospital.  
 Number of the object in this study: 77 of CKD-ND who could survey in 2012.  
 Surveyed Blood pressure, Laboratory findings (sCr, Hb, BUN, sCr etc...), Medication.  
 Estimated GFR :  $eGFR = 194 \times sCr \text{ (mg/dl)}^{-1.094} \times \text{age}^{0.287} \times (1.0739 \text{ in female})$   
 method of calculation :  
 Change of eGFR / year :  $(eGFR:2008 - eGFR:2011) / eGFR:2008 * 100 / 3$   
 $(eGFR:2011 - eGFR:2012) / eGFR:2011 * 100$   
 Outcome: Change of eGFR/Year  
 Statistical analysis: Paired t-test, Kai Square test  
 (JMP Pro 10.0.2 SAS Institute Inc. NC)

### Results

Profile of objects  
 n=77 male : 35 female : 42  
 age 13 ~ 85 y.o. 56.4 ± 16.5 y.o.

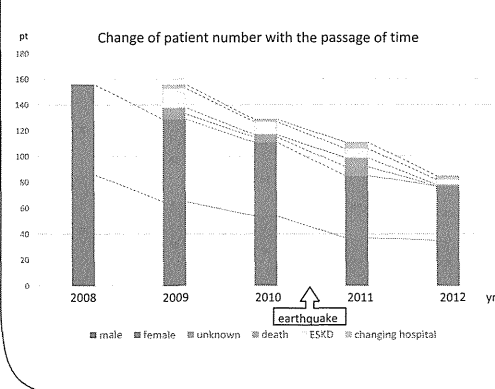
#### Cause of Kidney disease

Primary renal disease	52	Hypertensive nephropathy	3
Focal segmental glomerulosclerosis	2	with biopsy	1
IgA nephropathy	25	without biopsy	2
Minimal change nephrotic syndrome	5	Diabetic nephropathy	2
Membranous nephropathy	8	Secondary renal disease	12
Membranoproliferative glomerulonephritis	3	ANCA-associated vasculitis	5
Chronic glomerulonephritis	5	Lupus nephritis	3
Nephrotic syndrome	2	Other general disease	4
Interstitial nephritis	2	Disorder by other cause*	8

\* Hereditary (include FCK), drug induced dysfunction, infarction

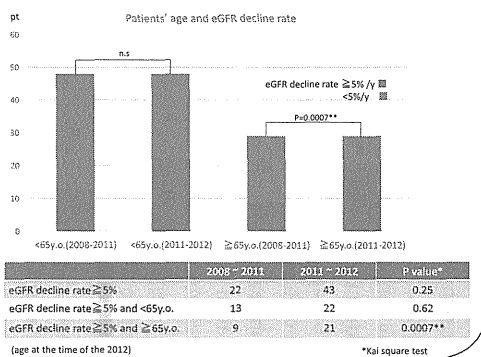
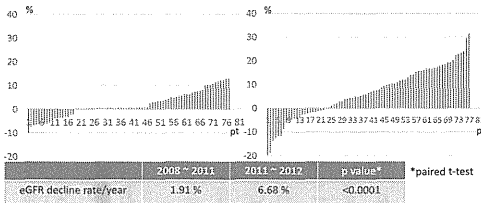
#### Laboratory findings on registration (2008)

N=77	range	mean ± SD
Hb	8.8 ~ 17.6 g/dl	13.0 ± 1.9 g/dl
sCr	0.4 ~ 3.2 mg/dl	1.1 ± 0.6 mg/dl
BUN	9.0 ~ 47.8 mg/dl	21.4 ± 9.0 mg/dl
eGFR	13.6 ~ 151.7 ml/min/1.73m <sup>2</sup>	60.3 ± 29.3 ml/min/1.73m <sup>2</sup>



#### Results of annual check

	2008	2011	'08 vs '11 p value*	2012	'08 vs '12 p value*
Systemic blood pressure (mmHg)	128.6 ± 12.7	127.9 ± 15.2	0.86	123.8 ± 12.5	0.004
Diastolic blood pressure (mmHg)	75.4 ± 9.1	74.6 ± 9.8	0.56	73.3 ± 8.6	0.05
Hb (g/dl)	13.0 ± 1.9	13.1 ± 2.0	0.64	12.7 ± 2.2	0.06
sCr (mg/dl)	1.1 ± 0.6	1.2 ± 0.8	0.004	1.3 ± 0.9	<0.0001
BUN (mg/dl)	21.4 ± 9.0	22.4 ± 12.0	0.22	22.9 ± 14.3	0.18
eGFR (ml/min/1.73m <sup>2</sup> )	60.3 ± 29.3	57.3 ± 28.9	0.009	53.6 ± 27.7	<0.0001
proteinuria (positive:%)	58.4	51.9		46.8	



### Discussion

The post-tsunami health and nutritional statuses of survivors were critical. Residents were affected on their lifestyles and health not only while residing in temporary shelters but long time. Several investigators reported there was manifestation of and deterioration in lifestyle-related diseases such as diabetes, obesity. The loss in muscle is also frequently observed after the change of life environment by disaster due to the decline of activity. On the other hand, the impact on chronic kidney disease by the great disaster was unclear. Originally, the decrease in renal function are occurring over time, the more prominent in the elderly compared to young people.

In this study, we have surveyed prospectively 3 years before disaster. We showed the GFR deterioration was accelerated between 2011 and 2012. Patients showed 5% or more decrease rate of GFR were significantly increased in 65 years of age or older. Furthermore, 12 patients didn't visit after 2011. It suggested that the influence for residents continued in spite of the daily life gradually returned to their pre-disaster levels in coastal area.

We should consider the relation between serum creatinine (sCr) and muscle mass. The deterioration of kidney disease is generally using eGFR. We used the sCr which depended on muscle mass as an indicator of GFR. The change of muscle mass described above masked further GFR decline rate. Cystatin C may be suitable as the marker of GFR in cases of affected activity after disaster especially elder residents.

### Conclusion

Acceleration of renal function decline rate has been observed after 1 year from the Great East Japan Great Earthquake compared to 2008 ~ 2011. Especially the elder patients were more affected than younger subjects. It is necessary to treat carefully for them and to survey with additional questionnaires about their life influenced by disaster.

### Acknowledgements:

We sincerely would like to give our gratitude for support by colleagues on the Great East Japan Earthquake.

Study contributors:  
 Y Yamaguchi (Japanese Red Cross Sendai Hospital),  
 K Obara (Tohoku Kosai Hospital),  
 I Kurihara (Tohoku Kosai Miyagi Hospital),  
 Y Kinoshita and K Sato (Japanese Red Cross Ishinomaki Hospital),  
 K Kaise (Sendai Medical Center),  
 A Sugiyama and Masahiro Miyata (Osaki Citizen Hospital),  
 K Takeuchi (Kojinsei Central Clinic),  
 K Nakayama and N Akiu (Sendai City Hospital),  
 T Otsuka (Katta General Hospital).

This study was supported by grants from Astellas Pharm Inc. and the Miyagi Kidney Foundation.  
 COI : The author have no financial conflict of interest to disclosure concerning the presentation.

**Abstract: [SA-PO258] Impact of the Great East Japan Earthquake on Chronic Kidney Disease without Renal Replacement Therapy Patients in Severely Destroyed Coastal Area of Japan**

**Gen Yamada, Mariko Miyazaki, MD, PhD, Tasuku Nagasawa, MD, Yasumichi Kinoshita, MD, PhD, Tae Yamamoto, MD, PhD, Kazuto Sato, MD, PhD, Masaaki Nakayama, MD, PhD, Hiroshi Sato, MD, PhD, Sadayoshi Ito, MD, PhD, Yaeko Murata.** *Nephrology, Endocrinology, and Vascular Medicine, Tohoku Univ Hospital, Sendai, Japan; Internal Medicine, Ishinomaki Redcross Hospital, Ishinomaki, Japan; Nephrology, Hypertension, Diabetology, Endocrinology and Metabolism, Fukushima Medical Univ, Fukushima, Japan.*

10:00 AM - 12:00 PM

**Background:** While there is serious impact by the great disaster for the dialysis patients, the disaster impact on chronic kidney disease (CKD) patients of pre-renal replacement therapy (RRT) has not been reported. The tsunami caused by Great East Japan Earthquake in March 2011 destroyed the coastal area of Miyagi prefecture. We conduct the prospective cohort study for CKD patients from 2006 in this area. We followed 156 patients treated in the severely devastated coastal zone, Ishinomaki. The applicable population is 220,000. The died or missed victims were 5,800 people, as well as 30,000 buildings totally collapsed in Ishinomaki medical zone. **Methods:** Using data from Miyagi Gonryo study, we identified 156 patients who registered July and August/2008 in Ishinomaki Redcross Hospital. They were followed GFR, urinary findings, blood biochemistry findings, treatment and outcome annually. The Great East Japan Earthquake occurred after 3 years from registration. We described the outcome of 1 year after disaster compared with previous 3 years. **Results:** One hundred and seventeen patients were valid in 2010. Annual check confirmed that 5 started dialysis and 3 died by disease. Four losted after January 2011, 4 died by the tsunami. After 1 year from disaster, 1 losted from June 2011, 7 moved, and 2 died by infectious disease in April 2011 and by heart failure in December 2011. Death and cardiovascular events didn't increase compared with 2010. While 29.9% of patients showed eGFR decline over 5%/year between 2008 and 2010 of 77 patients observed through study period to 2012, 58.4% of them decreased eGFR over 5%/year between 2011 and 2012. **Conclusions:** We concluded that the great tsunami disaster was possible to affect pre-RRT CKD patients. We should treat them carefully for more long term about the cardiovascular event and renal outcome.

**Course:** Annual Meeting: Abstract Sessions

**Session:** CKD: Estimating Equations, Incidence, Prevalence, Special Populations - II

**Date/Time:** Saturday, November 9, 2013 10:00 AM - 12:00 PM

Individual author disclosures are available in the Kidney Week 2013 *Disclosure Digest* which is available to each meeting participant or upon request in November.

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## UNIQUE ENVIRONMENTAL RISK FACTORS OF CKD: LIFE-STYLE RELATED DISORDERS AS RISK FACTORS FOR CHRONIC KIDNEY DISEASE IN A COMMUNITY-BASED POPULATION IN JAPAN

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CKD is associated with increased risk for end-stage renal disease and cardiovascular morbidity and mortality. CKD affects 10–15% of the adult population worldwide. In Japan, the prevalence of CKD significantly increased, especially in male, from the 1970s to the 2000s. During this period, prevalence of obesity has increased, potentially due to societal alterations in lifestyle such as motorized transportation with less walking and high-calorie intake. The prevalence of Chronic Diseases, i.e. hypertension, diabetes mellitus, dyslipidemia and obesity has also increased. Accumulation of these risk factors is associated with the progression of CKD and eventually with cardiovascular morbidity and mortality.

A nationwide screening program of the Specific Health Check-up and Guidance System was initiated in 2008 in Japan. To date, investigation of data from this screening program has led to the identification of several risk factors for CKD such as prehypertension, weight gain after maturity. Recently, we determined the prevalence and the risk factors for CKD in general population of Okayama, Japan. A community-based cohort with 28,132 adults (40-74 yo) who received the Specific Health Checkups and Guidance System in 2011 living in Okayama city was investigated. CKD was determined by eGFR calculated by modified MDRD equation for Japanese, and proteinuria assessed by urine dipstick.

Mean age of participants was 66 yo, 23% had overweight (BMI > 25), 11% were current cigarette smokers, 23.4% exhibited dyslipidemia. The prevalence of CKD was 20.8%. We identified elderly, hyperuricemia, obesity, and past history of cardiovascular events as adjusted risk factors for CKD morbidity. In subjects with hypertension and prehypertension and a normal blood pressure (over 140/90 mmHg), the risk for CKD was significantly greater (OR 1.14) than those with optimal blood pressure (less than 120/80 mmHg). Subjects with hyperuricemia (7.0 mg/dL and greater) exhibited increased risk for CKD (OR 2.13) than those with normal level (less than 5.5). Gender differences, past history of stroke, and HbA1c levels were not identified as significant risk factors. Subjects with risk factors such as moderate renal dysfunction, proteinuria, hypertension, dyslipidemia, impaired glucose tolerance were introduced to clinics or follow-up instruction course. Among those subjects receiving intervention, renal functional deterioration and/or proteinuria were improved in 60% of subjects in the next year. These results suggest that subjects with elderly age, obesity, mildly elevated serum uric acid, hypertension and previous history of cardiovascular events possess increased risk for CKD, and appropriate instruction and follow-ups may improve the outcome.

## AM3-3

### 地域医師会との連携：岡山市CKD病診連携ネットワーク（OCKD-NET）によるCKD病診連携への取り組み

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前島 洋平<sup>1</sup>，山崎 浩子<sup>2</sup>，吉田 賢司<sup>3</sup>，杉山 齊<sup>4</sup>，伊藤 浩<sup>3</sup>，楨野 博史<sup>2</sup>

本邦にて約1,330万人のCKD患者が存在するが，腎専門医のみによるCKD診療は不可能であり，かかりつけ医との病診連携が必須である。2007年に当科・岡山市医師会を中心として，岡山市内のかかりつけ医と6腎臓専門医施設との医療連携ネットワーク（Okayama city CKD Network：OCKD-NET）を設立し，現在115かかりつけ医施設が参加している。発足前の調査にて腎専門医/かかりつけ医間の紹介・逆紹介が低頻度であったため，腎専門医・かかりつけ医のプロフィールを作成し相互に配布し，定期セミナーにて，CKD医療連携の現状紹介・症例提示を行ってきた。その結果，発足2年後には，CKD概念・eGFRの認知度の向上，早期腎機能障害段階からの腎専門医紹介，そして双方向性のCKD医療連携の進展が伺われた。また，「CKD病診連携マニュアル」（厚労科研「CKDに関する普及啓発のあり方に関する研究」秋澤班）の紹介普及を実施し，各CKDステージにおける腎専門医・かかりつけ医の役割を明示した。さらに，「腎ぞうサポート手帳」（CKDの定義・検査項目・診断・治療等を概説）をかかりつけ医に通院中のCKD患者に配布し，前向き追跡検討を開始している。CKDは心血管疾患（CVD）のリスク因子であることから，循環器内科専門医との連携についても開始している。また，管理栄養士・保健師（岡山市保健所）等のコメディカルスタッフの参加を促進し，岡山市国保特定健診フォローアップ事業（CKD対策）への協力も行っている。OCKD-NETを通じたCKD病診連携促進等の取り組みによる，CKD・CVD進展抑制およびCKD患者の予後の改善が期待される。

## SP-2-3

### 岡山市CKD病診連携ネットワーク（OCKD-NET）によるCKD病診連携への取り組みの現状

岡山大学腎・免疫・内分泌代謝内科学

前島 洋平，槇野 博史

本邦にて約1,330万人のCKD患者が存在するが、腎専門医のみによるCKD診療は不可能であり、かかりつけ医との医療連携が必須である。2007年に当科を中心として、岡山市内のかかりつけ医と6腎臓専門医施設との医療連携ネットワーク（Okayama city CKD Network：OCKD-NET）を設立し、現在岡山市内の92のかかりつけ医施設が参加している。発足前に実施した、かかりつけ医へのアンケート調査では、腎専門医への紹介・腎専門医からの逆紹介の比率が低頻度に留まっている現状が伺われ、腎専門医との医療連携が進んでいない理由として、腎専門医施設の情報ならびに専門医との面識の不足が挙げられていた。そこで、腎専門医・かかりつけ医のプロフィールおよびMAPを作成し会員に配布している。さらに、年2回のセミナーを実施し、CKD医療連携の現状紹介を実際の症例提示も交えて行っている。また、管理栄養士等のコメディカルスタッフの参加を通じてかかりつけ医における栄養指導の必要性の認識向上も目指している。その結果、発足2年後（2009年）のアンケート調査結果では、CKD概念・eGFRについての認知度の向上、より早期の腎機能障害段階からの腎専門医紹介、そして双方向性のCKD医療連携の進展が伺われた。また、OCKD-NET地域医療連携パスを作成し、腎専門医への紹介基準・CKD地域医療連携における腎臓専門医・かかりつけ医の各CKD病期毎の役割分担等を明示した。また、患者用のOCKD-NET医療連携手帳を作成し、配布している。CKDの定義・検査項目・診断・治療について概説し、地域医療連携パスも記載し、かかりつけ医/腎臓専門医が各CKD病期での診療役割分担を確認できるように工夫している。本ネットワークでの取り組みによるCKD医療連携促進効果・CKD進展抑制効果についても今後検討を行う予定である。

